Librarians as Guiding Lights in the Digital Darkness: A Systematic Review of Libraries' Provision of Digital Literacy Services

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Abstract

In an ever-evolving technological world, digital literacy has become a critical skill for navigating information ecosystems, protecting privacy online, and full and active participation in civic and economic life. This systematic review explores the evolving role of librarians and libraries as key providers of digital literacy services, viewing them as 'guiding lights' in tackling the challenges posed by the digital divide and misinformation. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines were adopted for the study. A total of 13 electronic databases were used to make a comprehensive search between the years 2004 and 2024. The databases EBSCO Host, Scopus, Web of Science, Emerald, LISTA, LISA, Elsevier, Google Scholar, ProQuest, Taylor & Francis, Springer Link, IEEE Xplore, and Wiley Inter-Science were chosen based on their focus on digital literacy research. A total of 259 papers were included in the review. Seven themes were developed from the review of the included studies. The themes include: digital inclusion initiatives, digital literacy training, e-resources support, virtual reference services, digital collection, challenges, and prospects. Under each major theme, sub-sub-themes were included to fully capture the nuances of the theme. The review concludes with recommendations for library professionals, policy makers, and educators to strengthen collaborative efforts and digitally inclusive strategies to combat the digital divide. The study also advocates for continual investment in librarians and libraries as stewards of equitable access to 21st-century digital skills.

Keywords: digital literacy, libraries, librarians, digital divide, information literacy, systematic review, technology access.

1. Introduction

In today's knowledge-driven society, digital literacy has become an essential skill for individuals to effectively navigate the complexities of the 21st century (Akbar et al., 2024). The rapid proliferation of digital technologies has transformed the way people access, process and utilize information, making digital literacy a critical component of modern life (Alomari et al., 2023; Hamad et al., 2023). Digital literacy is now recognized as a core competency for full participation in modern society (Ghare & Kastikar, 2024). Digital literacy skills encompass the foundation for every individual to work in a productive way in the digital era (Spante et al, 2018). However, many individuals,

especially in underserved communities, continue to face significant barriers to developing these essential skills, resulting in a persistent digital divide. Generally, digital literacy encompasses the ability to effectively utilize digital technologies, critically evaluate online information and participate in the digital economy. Digital literacy refers to the possession of knowledge, skills, and attitudes required to effectively use digital technologies such as computers, smart phones and the internet to access, evaluate and utilize online information (Izu & Fombad, 2024). Scholars such as Shahzad & Khan (2023) also posit that, digital literacy involves technical skills, information literacy, communication skills and critical thinking. Digital literacy also refers to an individual's ability to effectively find, evaluate and create coherent information. It encompasses a range of abilities that let people communicate carefully and effectively with technological devices, resources and systems (Negi & Sain, 2023; Sreelekshmi & Devi, 2021).

Digital literacy services are programs and initiatives designed to equip individuals with the necessary skills to participate fully in the digital economy (Khan & Shahzad, 2024). These services according to Ilesanmi (2024) include; basic computer skills training, internet navigation and online safety education, digital citizenship programs, online resource navigation and information literacy training, Digital media and technology skills development. Libraries, particularly public and academic libraries, have long been recognized as inclusive and accessible institutions committed to lifelong learning. According to Kari (2020) libraries as venerable institutions of knowledge and learning have a vital role to play in bridging the digital divide and empowering communities through digital literacy (Sreelekshmi & Devi 2021). By offering digital literacy programs, libraries can help bridge the gap between those that are digitally savvy and those who struggle to access and effectively utilize digital resources (Casselden, 2023; Diseiye et al., 2023). Likewise, llibrarians by virtue of their expertise in information management and user education, are uniquely positioned to lead efforts that foster digital literacy among diverse populations. As such, libraries around the world have increasingly integrated digital literacy services into their programming, ranging from basic computer training to more advanced instruction in digital content creation and cybersecurity awareness. These skills far exceed the ability to simply power on the computer or find our way around a mobile device; they include skills around seeking out information, evaluating it critically, keeping oneself safe online, and using the digital world and resources ethically.

The provision of digital literacy services in libraries is not only a response to the changing information landscape but also an opportunity to redefine the libraries' role in the digital age (Akbar et al., 2024; Alomari et al., 2023; Hamad et al., 2023; Kari, 2020). Effective digital literacy services can enable individuals to fully participate in the digital economy, access essential services and engage with their communities.

Despite this growing trend, there remains limited synthesized evidence on how libraries are delivering these services, what models and strategies are most effective, and how these efforts are being measured and evaluated. A systematic review is therefore necessary to map existing research, identify gaps in the literature, and highlight best practices in library-based digital literacy programs. This review aims to contribute to the ongoing discourse by providing a comprehensive analysis of the role libraries and librarians play in bridging the digital divide. It seeks to inform policymakers, educators, and library professionals on how to strengthen and scale digital literacy interventions through libraries, ultimately enhancing digital equity in communities. In order to achieve the aim of this review, the researchers developed the following objectives:

1. To identify and synthesize existing research on the nature and scope of digital literacy services provided by libraries.

2. To examine the strategies and instructional models used by librarians to deliver digital literacy programs.

3. To explore the challenges and barriers libraries face in implementing digital literacy services.

4. To identify gaps in the literature and propose directions for future research and practice in library-based digital literacy programming.

2. Methodology

Systematic reviews differ significantly from traditional literature reviews, which often rely on a limited selection of studies drawn from a small number of databases (Tinmaz et al., 2022). In contrast, this systematic review follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Shamseer et al., 2015), which offer a rigorous and transparent approach for conducting and reporting systematic reviews. Although originally designed for reviews of randomized trials,

PRISMA has become a widely accepted framework for ensuring methodological consistency and clarity in all types of systematic reviews, including those in social science and education (Moher et al., 2015). This study adopted PRISMA because it provides an evidence-based minimum set of items for reporting, ensuring the review process is comprehensive, replicable, and minimizes bias. PRISMA structures the review process into four main stages namely: identification, screening, eligibility, and inclusion.

2.1 Identification

The first stage, which is the identification stage identification involved a comprehensive and structured search across multiple electronic databases and other sources to locate all potentially relevant studies. At this stage, duplicate records were identified and removed. A total of 13 electronic databases were systematically searched for studies published between 2014 and 2024. The databases included EBSCOhost, Scopus, Web of Science, Emerald, LISTA, LISA, Elsevier, Google Scholar, ProQuest, Taylor & Francis, SpringerLink, IEEE Xplore, and Wiley Inter-Science. These databases were selected based on their coverage and relevance to research on digital literacy and library services, as illustrated in Figure 1. The search focused on peer-reviewed articles published in English and other major languages that discussed digital literacy and the role of libraries or librarians in providing related services. To ensure a comprehensive and rigorous search, an eligibility criterion was developed, and both basic and advanced search strategies were employed. Search terms were derived from key constructs in the study title, and synonyms were used to broaden the scope. Boolean operators were applied to refine and expand the search, specifically, "OR" to include synonyms and "AND" to combine relevant concepts.

The basic search string used was: ("library" OR "libraries" OR "librarians") AND ("digital literacy" OR "digital skills" OR "information literacy") AND ("services" OR "programs" OR "initiatives").

An advanced search string was also applied to ensure thoroughness and validity: (("library" OR "libraries" OR "librarians") AND ("digital literacy" OR "digital skills" OR "information literacy") AND ("services" OR "programs" OR "initiatives")) OR (("digital divide" OR "digital inclusion") AND ("library services" OR "library programs")) OR (("information literacy" OR "media literacy") AND ("library instruction" OR "library outreach")).

Figure 1

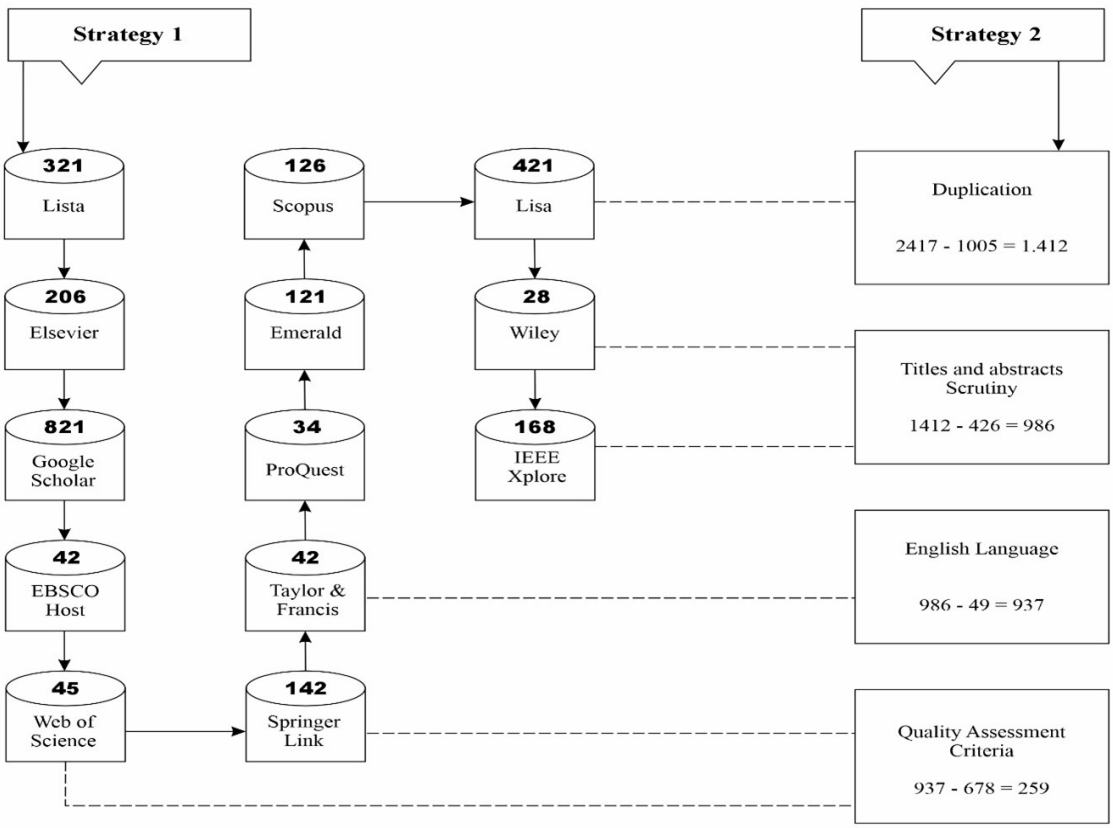


Figure 1: Data Extraction from databases

2.2 Screening

The second stage of the systematic review process, known as screening, involved a careful and structured review of the titles and abstracts of all the identified studies using predefined inclusion and exclusion criteria to assess their relevance to the study. The process was conducted in three phases to ensure that only the most suitable and high-quality studies were included. The first phase involved a preliminary examination of the titles and abstracts to determine whether the articles aligned with the focus of the research. Articles that appeared relevant were then subjected to a second phase, which involved full-text screening. In the third phase, the predefined eligibility criteria were applied to confirm the final selection of studies for inclusion in the review. The selection process was guided by the research questions, and the findings from the eligible studies were systematically tabulated. During this process, studies written in languages other than English were excluded, as the researchers lacked the capacity to analyze content in other languages. Additionally, articles that did not directly address the topic under investigation or had no relevance to the research questions were removed. Studies that fell outside the study's specified time frame of 2004 to 2024 were also excluded. Furthermore, non-peer-reviewed materials such as books, dissertations, conference proceedings, newspaper articles, magazines, and institutional newsletters were not considered for inclusion. This screening procedure ensured that only peer-reviewed, up-to-date, and thematically relevant articles were included, thereby strengthening the rigor, transparency, and overall quality of the systematic review.

2.3 Eligibility

In the third stage of the systematic review process, the full texts of the remaining articles were carefully assessed to ensure they met the predefined criteria for inclusion in the study. This step was crucial in determining the final set of studies to be analyzed in-depth. Data extraction was conducted collaboratively by all three researchers using a structured scoring system to maintain objectivity and consistency. Each article was evaluated based on its alignment with the objectives of the review. Studies that directly addressed the research objectives were marked as "Yes," indicating full relevance. Articles that did not reflect the central themes or aims of the study were scored as "No" and excluded from further consideration. In cases where papers were not entirely aligned but contained some useful or relevant information, a score of "Partly" was assigned. These "Partly" articles were flagged for re-examination and discussion before making a final decision on their inclusion. During this stage, metadata were systematically extracted from each article. This included the names of the author(s), year of publication, key findings, recommendations, conclusions, and any research gaps identified by the studies. This extraction helped in organizing and synthesizing the data needed for comprehensive analysis and comparison across studies. The eligibility stage ensured that the final selection of studies provided substantial and credible evidence to answer the research questions and contribute meaningfully to the understanding of libraries' provision of digital literacy services.

2.4 Inclusion

The final stage of the systematic review process, inclusion involved selecting studies that fully met all the established eligibility criteria for synthesis and detailed analysis. At this point, all relevant data were collated, summarized, and presented according to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, as illustrated in Figure 2. The systematic search process, guided by our inclusion criteria, initially identified a total of 2,417 articles across the selected databases. After the removal of duplicate entries, the number of unique articles was reduced to 1,412. Title and abstract screening then narrowed this number further to 986 articles deemed potentially relevant. Subsequently, 49 articles were excluded because they were not written in English, resulting in a refined set of 937 articles. These remaining articles underwent full-text screening and quality assessment, during which each study was evaluated for methodological rigor and relevance to the research objectives. Following this thorough assessment, a total of 259 articles were ultimately selected for inclusion in the final systematic review. These articles formed the foundation of our analysis, offering comprehensive insights into the role of libraries and librarians in the provision of digital literacy services. The entire process from the initial identification of sources to the final inclusion of studies spanned a period of 19 weeks, underscoring the detailed and rigorous nature of the review.

Figure 2

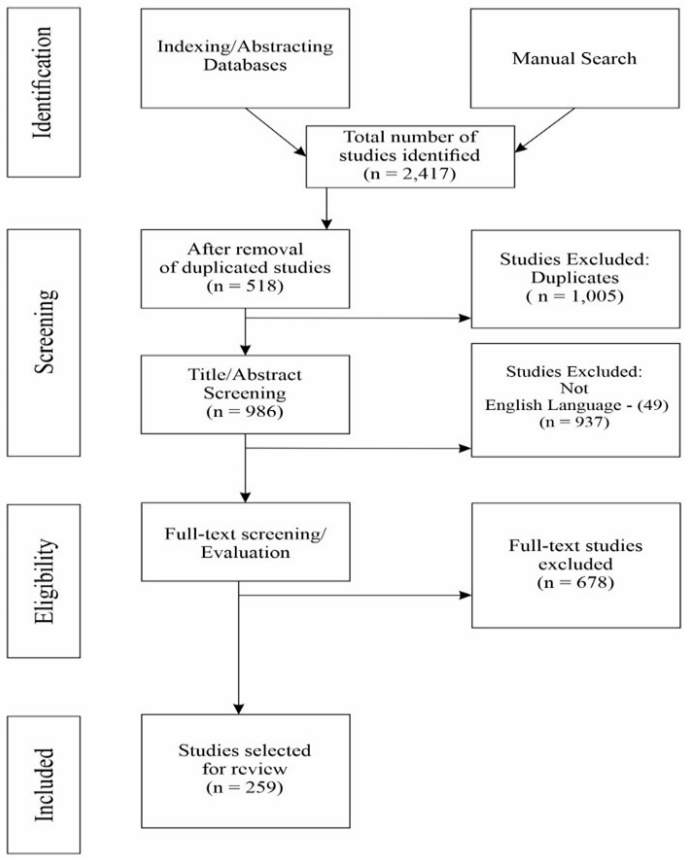


Figure 2: Flow chart

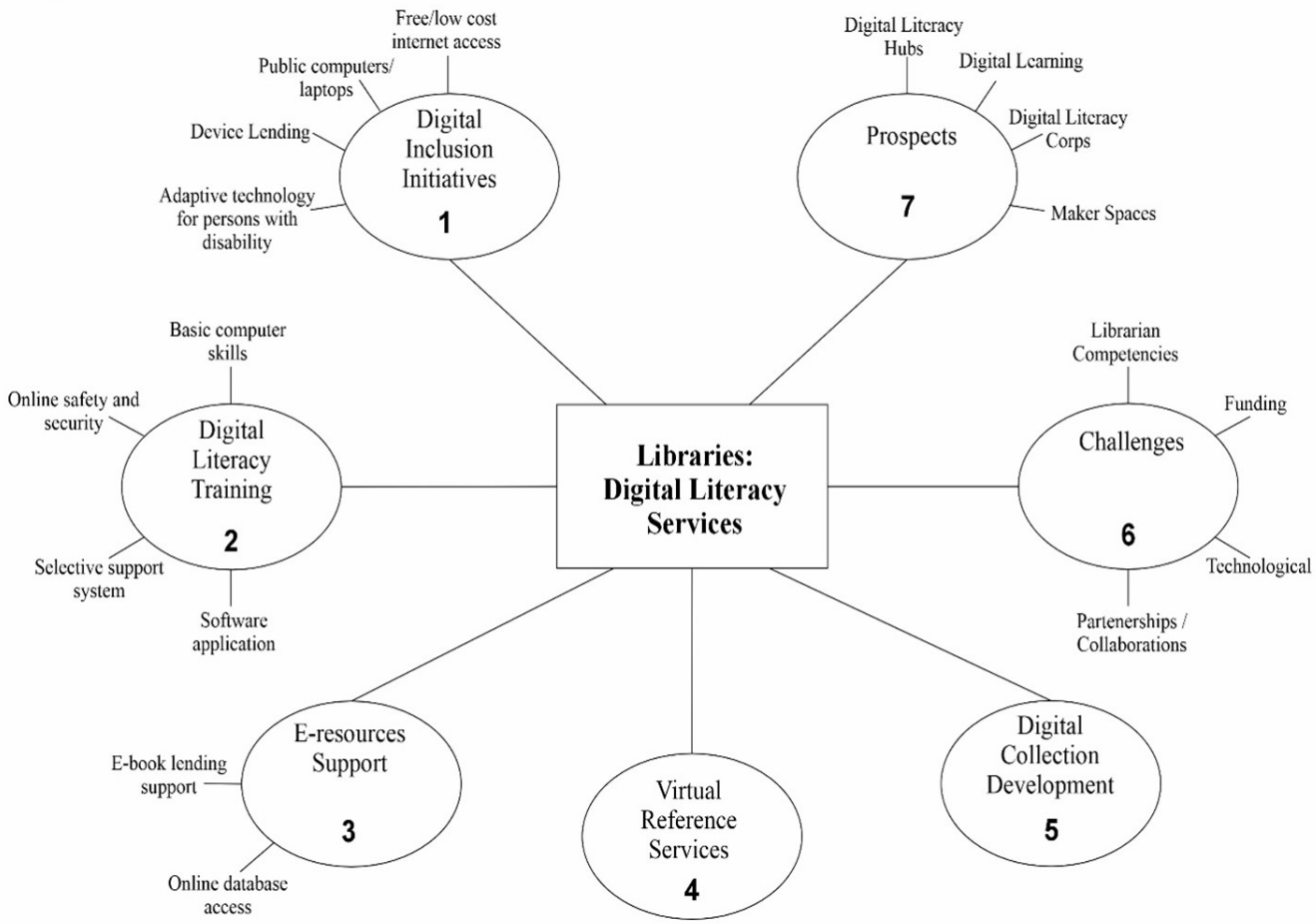
3. Results

As illustrated in Figure 3, libraries serve as vital catalysts for digital empowerment by offering a broad range of digital literacy services. These services span across seven interrelated domains: Digital Inclusion Initiatives, Digital Literacy Training, E-resources Support, Virtual Reference Services, Digital Collection Development, Challenges, and Prospects. Together, these thematic areas provide a holistic view of how libraries are addressing the growing digital demands of their communities. The literature strongly supports the essential role libraries play in not only facilitating access to digital tools but also in fostering critical digital skills that empower individuals and bridge socio-technological gaps.

3.1. Digital Inclusion Initiatives

To start with, as shown in Figure 3, libraries are essential for communities by functioning as a unique resource for closing the digital divide and elevating digital inclusion. Numerous studies (e.g.Real et al., 2014; Kosmicki, 2019; Jutras, 2023; ALA, 2023) have demonstrated that initiatives developed by libraries are effective at addressing equity gaps by providing underserved populations with access to technology

Figure 3



and digital content (Kwon & Onwuegbuzie, 2017). Libraries offer free or low-cost internet access as a primary digital inclusion strategy (Cunningham et al., 2004; ALA, 2014; Pearson et al., 2016; Frisque, 2021; Wang & Si, 2024). Moreover, many libraries extend services such as computer and device lending to users who lack access at home (Jaeger & Gorham, 2015; Gorham & Bertot, 2018; Bertot et al., 2020; Gould et al., 2021). Additionally, to cater to users with disabilities, libraries have introduced adaptive technologies to ensure equitable participation in digital spaces (Hill, 2013; Jaeger et al., 2015; Ashraf, 2017; Fanea-Ivanovici et al., 2020; Addai-Wireko et al., 2020; Ayoung et al., 2021; Chaurasia & Singh, 2022; Hamad, 2023; Abu Qaadan et al., 2024). These services are crucial in alleviating socioeconomic and geographic disparities that hinder access to digital resources.

3.2. Digital Literacy Training

Beyond access, libraries actively foster digital competence through structured digital literacy training. The literature underscores that such training is vital for community development and for equipping individuals with the capacity to participate meaningfully in a digitally-driven world (McKrell, 2014; Konstantina & Joanneke, 2016; Crockett, 2018). Training programs often cover a wide range of skills, from basic computer literacy to advanced application use and online safety. Studies (e.g., Liao & Pope, 2008; Onyedokun et al., 2018; Deltor et al., 2020; Muleka, 2021; Udoh, 2024) highlight how libraries serve as grassroots educators by offering foundational digital literacy workshops. Further research (Starr, 2004; Matz, 2008; Anday et al., 2012; Philips & Anderson, 2020; Rocha Estrada et al., 2022; Liu et al., 2023; Dunmade & Tella, 2023; Kont, 2024; Saha, 2024) has documented the breadth and adaptability of these programs, often tailored to meet local needs. It is worth noting, however, that much of the evidence around libraries' provision of online safety and security training resides in program descriptions and grey literature rather than in formal academic publications. Nonetheless, under the umbrella of digital literacy training, many libraries offer specialized or selective support services. These include customized research support, maker spaces, technology-based learning environments such as 3D printing, and programming workshops all designed to enhance digital literacy in a dynamic and engaging manner (Hunt, 2008; Seal, 2015; Uzohue & Yaya, 2016; Lille, 2016; Hung et al., 2016; Dallis, 2016; Wang, 2022; Thompson, 2023; Nisha, 2024).

Also, libraries across various sectors including academic, school and public libraries are offering a diverse array of software application services tailored to the needs of their user communities. These include: productivity suites; word processing, spreadsheet, and presentation software for example, Microsoft office, Google workspace, data analysis tools like SPSS, StatuS, AFBN, SOUL3.0, SAS, Stata , R and R studio which are used for task such as resume writing, job searching and performance analysis as well as research support, library management tools such as Koha, Folio, Evergreen, Mailchimp help streamline cataloging and circulation tasks and software for digital and multimedia creation e.g Adobe Creative, cloud python, Matlab, citation reference management software e.g. Zotero, Mendeley, endnote (Heinrichs, 2008; Górski & Marcinek, 2010; Marshall et al., 2013; Garrison, 2013; Yoon & Schultz, 2017; Mansouri & Asi, 2019; Liu & Shao, 2023; Surwade et al., 2023; Ahammed et al., 2024).

3.3. E-resources Support

An essential element of digital literacy involves the effective use of electronic resources. Libraries provide users with access to a wide range of e-books, academic databases, and online journals. They also offer guidance on how to use these platforms efficiently (Morrison, 2014). Support may include instructional sessions, access credentials, and user-friendly tutorials. As noted by Julien and Genuis (2011), these services are indispensable in helping users navigate the information landscape, thereby enhancing scholarly research and informed decision-making. Additionally, libraries, are also offering digital literacy services that focus on e-book lending support and online database access to satisfy the changing needs of their users. These services are key in providing access to a large number of digital resources that support education and research (Dusollier, 2015; Renn et al., 2019: Anand & Nair, 2019; Board & Stutzman, 2020; Pang, 2022; Kibithe & Naibei, 2023; Mercanti, 2023; Sokil, 2023). However, despite progress, restrictive licensing agreements with publishers remain a challenge (Nowakowsky, 2024).

3.4. Virtual Reference Services

With the advancement of digital communication tools, libraries have expanded their virtual reference services. These include real-time chat assistance, email consultations, and even AI-based query support systems (Radford et al., 2011). Such services provide flexible and timely help to users, especially

in remote and underserved locations (Gray, 2016; Khobragade & Lihitkar, 2016; Schubert,2017; Kaplan, 2023; Alyaparangu et. al, 2023; Mariano, 2024; Wang, 2024). According to Connaway and Faniel (2014), virtual services have improved user satisfaction and enabled libraries to extend their reach beyond physical boundaries, making information access more inclusive. Some studies also highlight a need for user education and training, as well as infrastructural development to prevent underutilization of the services, especially real-time AI-driven ones (Younus, 2014; Mupaikwa, 2023). Despite the numerous benefits of VRS in libraries, a recent study by Awogbami (2024) reports that challenges, such as technological barriers and issues with service quality, persist, especially in developing countries.

3.5. Digital Collection Development

Libraries also contribute to digital literacy by curating and developing digital collections. This includes digitizing local heritage, licensing multimedia resources, and maintaining digital archives. Joo and Choi (2015) note that such collections are not only informative but also stimulate creativity and self-directed learning. Librarians play a pivotal role in content selection, metadata creation, and digital preservation, ensuring content is relevant, accessible, and inclusive. The 21st-century libraries are actively expanding their digital services to meet the demands of their users. The literature shows a trend of shifting towards more digital collections in academic and public libraries (Matusiak, 2015; Brazier, 2015; Mani, 2023; Sieben & Pei, 2024). However, recent studies (Mongeon et al., 2021; Mani, 2023; Ramsey, 2024; Sieben & Pei, 2024) also highlight challenges such as budgetary limitations in libraries, discovery and access of resource issues, format diversity, and restrictive licensing, all pose significant barriers to developing digital collections in libraries.

3.6. Challenges

Despite their positive impact, libraries face multiple challenges in sustaining digital literacy services. Limited funding, inadequate technological infrastructure, lack of skilled staff, and insufficient partnerships remain key constraints (Hinchliffe & Wong, 2012). Furthermore, many librarians require ongoing professional development to keep pace with evolving technologies and pedagogies (Walton & Hepworth, 2011). The absence of supportive policy frameworks also limits the scale and sustainability of library programs, particularly in developing contexts. Findings from the literature (Real et al., 2014; Ajayi, 2016; Vrana, 2020; Abdussalam et al., 20201; Whiteside et al., 2022; Ullah et al., 2023; Conners, 2024; Wicen, 2024; Bulungu & Nkebukwa, 2024) show that Libraries are often faced with significant funding limitations that prevent them from effectively satisfying the needs of their user communities and maintaining key digital literacy programs. It is important to note that Studies such as (Afolabi, 2018; Akussah et al., 2020; Abdussalam et al., 2021; Bulungu & Nkebukwa, 2024) explain that limited funds, inadequate power supply and unstable internet connectivity are some of the pressing issues that African libraries face in delivering services.

Another major setback in delivering effective digital literacy services in libraries is related to librarian competencies. Many librarians lack adequate training in managing and creating digital content, as well as knowledge in emerging technologies (Ullah et al., 2023; Ferro et al., 2024; Awogbami, 2024). Also, financial constraints often restrict librarians' access to professional development programs (Ullah et al., 2023; Awogbami, 2024). Although partnerships and collaborations with other organisations is critical for enhancing digital literacy service provision, libraries sometimes struggle to establish these relationships. The systematic review by Tinmaz et al. (2022) reports some key collaborative and institutional challenges: Libraries that are not well-resourced find it difficult to establish equitable partnerships due to differences in infrastructure, technical know-how, and funding. Their review further notes that the efforts of some libraries for cross-sector partnerships are often limited due to institutional bureaucracies. Technological barriers such as slow internet connectivity, inadequate digital resources, and the constantly evolving nature of digital technology all affect libraries' ability to effect effectively implement digital programs (Ullah et al., 2023; Ferro et al., 2024; Awogbami, 2024). These challenges are however much more persistent in developing countries where access to modern technology is limited.

3.7. Prospects

Looking forward, the prospects for libraries in advancing digital literacy are highly promising. Emerging innovations such as Digital Literacy Hubs, Digital Learning Corps, and Maker Spaces are redefining the role of libraries as centers of innovation and creativity (Stephens & Jones, 2014). Results from the literature (Mainka & Khveshchanka,

2012; Johnston, 2020; Vrana, 2020; Koh, 2022; Jutras, 2023; Rajan & Esmail, 2023; Eraliyev et al., 2023; Ghosh et al., 2024) further suggest libraries are becoming digital literacy hubs by providing access to digital resources and multimedia labs where patrons can engage with advanced technologies like virtual reality (VR). Although there is no uniformity among libraries regarding their digital and physical services, most provide access to e-resources, virtual reference services, workshops, and training sessions geared towards enhancing information literacy. This indicates significant potential for libraries to become digital literacy hubs, creating innovative spaces like maker spaces and digital literacy corps (Mainka & Khveshchanka, 2012).

Digital platforms also allow libraries to offer virtual workshops, webinars, and self-paced learning modules, which can help address digital literacy training for a wider audience, including remote learners and those with mobility challenges (Smith & Storrs, 2023). Also, Partnerships with tech firms enable libraries tap into state-of-the-art digital tools, software, and technical expertise that would otherwise be cost-prohibitive. Many tech companies offer numerous grants, discounted software, or training support directly to help libraries get the most out of technology to serve patrons (Ylipulli et al., 2023). These initiatives underscore the evolving identity of libraries, not just as information repositories, but as active agents in digital transformation and community empowerment. Increased government attention, growing partnerships, and recognition of libraries in national digital strategies position them as essential stakeholders in building digitally resilient societies.

4. Recommendations for sustainable digital literacy programs:practical Solutions

4.1.Policy

Policymakers must make digital literacy a key component of national education and workforce development strategies to ensure the programs are long-term and sustainable. Governments must establish steady funding for libraries, allowing them to enhance their digital services, upgrade technology, and train workers. Forming public-private partnerships with technology companies can allow libraries to leverage the most cutting-edge tools, discounted software, and expert training. Invariably, national digital literacy standards can help libraries develop curricula that are effective for varied learning audiences.

4.2. Innovative teaching strategies

Libraries are expected to use innovative teaching methods to improve digital literacy training. Gamification techniques like interactive challenges and digital badges can boost motivation and engagement. AI-powered intravenous learning paths, for example, can adjust instruction to a specific skill level. Also, establishing peer-led training programs where tech-savvy individuals mentor and support their peers can build an inclusive learning environment. Moreover, implementing the use of online platforms to deliver virtual tutorials and webinars that can now be attended by those learning remotely or in case a student has a mobility issue, has to be taken into account.

4.3.Capacity-building programs for librarians

Workshops in general and those that allow for hands-on practice are essential for librarians to effectively support digital literacy initiatives in schools. Training programs should include training on emerging technologies, online research, cybersecurity, and instructional techniques. Libraries can work together with universities, technology companies, and public entities to create field-specific certification programs for librarians in the field of digital learning. Moreover, librarian networks for knowledge-sharing and mentorship are other solutions that can create further expertise in the field. A train-the-trainer model, whereby selected members of the libraries have advanced training and mentor their peers, would lead to progressive, sustainable capacity-building across the institution. Training librarians in these skills can further establish libraries as the key community center for digital literacy.

5.Future Directions and Research Gaps

5.1 New development: Services for digital literacy

Libraries, as focal points of literacy, need to renew their vision in light of trends in digital literacy and other wasteland phenomena. The landscape of digital education is evolving with innovations like AI (artificial intelligence) and machine learning, which allow for customized learning tracks based on a learner's unique ability. VR/AR applications allow immersive training, especially when it comes to coding and complex skills that require overtraining in fields such as cybersecurity. Furthermore, increasing mobile technology has given libraries a need to provide mobile-friendly digital literacy materials since many members of society rely solely on the internet through their phones. Another emerging trend involves a digital financial literacy

program to equip individuals with the knowledge to navigate online banking, e-commerce, and digital payment systems with confidence and integrity.

6. Recommendations for further study

The field of digital literacy research is rapidly emerging, and many research pathways are still open for exploration. First, we need longitudinal studies assessing the long-term impact of library-based digital literacy programs on employment, education, and social inclusion. Many of the programs being delivered are achieving short-term success, but if we are looking to find out the real-life impact on people and the community, there should be a much deeper work of investigation. Second, research is required to learn about effective ways to engage digitally resistant populations (older adults and people with low confidence in technology). Such research could explore emerging roles for libraries and library leadership in fostering digital resilience, where users not only adapt to changing technologies but also learn to effectively navigate a landscape of digital misinformation. Gaining a better understanding of AI-driven learning tools in library contexts, in turn, results in better personalized digital literacy learning.

7. Potential policy implications

Policymakers must embed libraries as core components of their wider technology transformation strategies to increase the impact of Digital Literacy initiatives. They can make sure that there are sustainable models in place for library funding so that libraries can continue to remain relevant as technological advances come very fast. Also, policies need to guarantee that access to support is universally accessible to all, particularly impacted groups like rural and low-income individuals. Continuing policies that encourage partnerships with libraries in the for-profit sector can bring more resources and more effective programs to our communities. Finally, data privacy governance should be integrated into digital literacy policies to support libraries' commitment to ethical practice in the digital literacy environment. Aligning these policy considerations would enable governments to position libraries as a sustainable factor in producing a new digital divide.

8. Conclusion

In sum, libraries are no longer passive information repositories; they are active change agents and digital literacy champions. Through a combination of inclusive access, adaptive technologies, foundational training, and innovative learning environments, libraries continue to empower individuals, uplift communities, and promote digital equity on a global scale.

The paper presents a discussion of how important libraries are when it comes to supporting digital literacy and/or overcoming the digital divide, or, promoting social inclusion. Libraries are significant in promoting digital inclusion by providing public access to the Internet, lending programs for devices, and implementing targeted training for different demographic segments. Yet for all their storied significance, libraries are facing funding cuts, staffing shortages, and opposition to new technology. Notwithstanding, there is hope with partnerships with tech firms, backing from the government, and the integration of newer technologies like AI-driven learning and VR-supported training.

The state of libraries suggests the continued need for libraries and policymakers to invest not just in digital literacy efforts but also in programs that support access to computer ownership. Also, in academic settings, librarians and educators will need to adapt as trends change, as teaching methods evolve, through new online training, new capacity-building initiatives, and so on. In effect, policymakers should focus on making sure that digital equity is a priority, consistent funding for libraries, and that they will catalyze public-private partnerships and integrate digital literacy into national education and workforce policies. It must be stated that as digital technology disrupts every corner of society, libraries must change, too, to remain valuable centers of learning. It is not just about giving people access to books; however, it is about equipping people with skills for an increasingly digital world. Modifying themselves to technological variations and facilitating access to digital literacy will help libraries continue to be relevant institutions in promoting lifelong learning and social empowerment in the digital age.

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